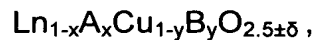


IN THE CLAIMS

Please amend the claims as indicated in the following listing of claims, which replaces all prior listings of claims.

1. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel cells(SOFCs) cell (SOFC), comprising:

an oxide having oxygen vacancies and high conductivity ~~as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as~~ and having a formula:



wherein Ln is a lanthanide ion, A is an alkaline-earth metal, B is a metal selected from the group consisting of cobalt(Co), iron(Fe), nickel(Ni), zinc(Zn), manganese(Mn), aluminum(Al), vanadium(V), iridium(Ir), molybdenum(Mo), palladium(Pd), platinum(Pt), magnesium(Mg), ruthenium(Ru), rhodium(Rh), chromium(Cr) and zirconium(Zr), X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A-side~~ by an alkaline-earth metals, metal, and has ~~converting partly~~ copper(Cu) partly converted to a trivalence copper ion, forming to form perovskite having oxygen vacancies with a regular ~~regularity~~ sequence, ~~utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted through external~~

~~circuit with converting oxygen to forming oxygen ion, obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte.~~

2. (Currently Amended) The materials cathode according to claim 1, wherein ~~said materials comprise~~ the cathode comprises at least 1% copper(Cu).

3. (Canceled)

4. (Canceled)

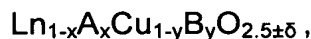
5. (Canceled)

6. (Currently Amended) The materials cathode according to claim 1, wherein ~~said $\text{Ln}_{1-x}\text{A}_x\text{Cu}_y\text{B}_{2.5\pm\delta}\text{O}_2$ is for said cathode in solid oxide fuel cells(SOFCs) operating~~ the cathode operates at a temperature in a range of [400-800] 400 – 800 degrees Celsius.

7. (Canceled)

8. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel cells(SOFCs) cell (SOFC), comprising:

an oxide having oxygen vacancies and high conductivity as ~~cathode~~,
~~wherein cathode accelerating absorption of oxygen molecule and diffusion of~~
~~oxygen ion; said materials having general form as~~ and having a formula:

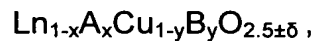


wherein Ln is a lanthanide selected from the group consisting of lanthanum(~~La~~), cerium(~~Ce~~), praseodymium(~~Pr~~), neodymium(~~Nd~~), promethium(~~Pm~~), samarium(~~Sm~~), europium(~~Eu~~), gadolinium(~~Gd~~), terbium(~~Tb~~), dysprosium(~~Dy~~), holmium(~~Ho~~), erbium(~~Er~~), thulium(~~Tm~~), ytterbium(~~Yb~~) and lutetium(~~Lu~~), A is an alkaline-earth metal selected from the group consisting of beryllium(~~Be~~), magnesium(~~Mg~~), calcium(~~Ca~~), strontium(~~Sr~~), barium(~~Ba~~) and radium(~~Ra~~), B is a metal selected from the group consisting of cobalt(~~Co~~), iron(~~Fe~~), nickel(~~Ni~~), zinc (~~Zn~~), manganese(~~Mn~~), aluminum(~~Al~~), vanadium(~~V~~), iridium(~~Ir~~), molybdenum (~~Mo~~), palladium(~~Pd~~), platinum(~~Pt~~), magnesium(~~Mg~~), ruthenium(~~Ru~~), rhodium(~~Rh~~), chromium(~~Cr~~) and zirconium(~~Zr~~), X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A-side by an alkaline-~~
~~earth metals, converting metal, and has partly copper(Cu) partly converted to a~~
~~trivalence copper ion; to form~~ forming perovskite having oxygen vacancies with
~~regularity a regular~~ sequence, ~~utilizing catalytic accelerating cathode reaction of~~
~~cathode electrode, compounding electron being conducted though external~~
~~circuit with converting oxygen to forming oxygen ion , obtaining anode and~~
~~hydrogen reaction by diffusing oxygen ion to electrolyte.~~

9. (Currently Amended) ~~Materials for A cathode that accelerates~~
~~absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel~~
~~cells(SOFCs) cell (SOFC) having the general form a formula~~ $ABO_{2.5\pm\delta}$,
 comprising:

~~an oxide having oxygen vacancies and high conductivity as cathode,~~
~~wherein cathode accelerating absorption of oxygen molecule and diffusion of~~
~~oxygen ion; said materials having general form as and having a formula:~~



wherein Ln is a lanthanide ion, A is an alkaline-earth metal, B is a metal selected from the group consisting of cobalt(Co), iron(Fe), nickel(Ni), zinc(Zn), manganese(Mn), aluminum(Al), vanadium(V), iridium(Ir), molybdenum(Mo), palladium(Pd), platinum(Pt), magnesium(Mg), ruthenium(Ru), rhodium(Rh), chromium(Cr) and zirconium(Zr), X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A-side by an~~ alkaline-earth metals, metal; and has converting partly copper(Cu) partly converted to a
 trivalence copper ion, forming to form perovskite having oxygen vacancies with a
regular regularity sequence, ~~utilizing catalytic accelerating cathode reaction of~~
~~cathode electrode, compounding electron being conducted though external~~
~~circuit with converting oxygen to forming oxygen ion , obtaining anode and~~
~~hydrogen reaction by diffusing oxygen ion to electrolyte.~~